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Distributed Operating System Experiment (DOSE) Application Installation Manual

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ADMINISTRATIVE INFORMATION

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1.0 INTRODUCTION

1.1 PURPOSE

This installation manual describes the procedures for installing the unclassified Distributed Operating System Experiment (DOSE) Version 4.0 application designed and implemented by the Naval Ocean Systems Center's Distributed Systems Branch. The DOSE application uses the Cronus distributed environment developed by BBN Systems and Technologies Corporation for the Rome Air Development Center, Rome, NY.

The distribution tape of the DOSE application was created on a Sun3 Workstation (OS Release 3.5). However, the DOSE application can run on Sun2 and Sun3 Workstations, Sun386i, and any other machine that has UNIX (or UNIX-like) as the constituent operating system for Cronus.

This manual is recommended reading before installing the application.

1.2 REQUIREMENTS

The following describes the minimum requirements needed before installing the DOSE application:

1. Cronus (release 1.3 or newer release) must be running on the machines being used for the DOSE application.
2. At least two machines with monitors are needed to demonstrate the distributed capability of the application.
3. One of the DOSE application components is a graphics display. At least one of the machines with a monitor must have the *Suncore* graphics package to compile the graphics display files.
4. The DOSE application is written in C; thus, a C compiler is needed.
5. Familiarity with Cronus and UNIX is required.

1.3 ADDITIONAL DOCUMENTS

The two companion documents to this one are *Distributed Operating System Experiment 1988 Source Code* (Kwong, 1989) and *Distributed Operating System Experiment (DOSE) Application User's Manual* (Gadbois, 1990). The *Distributed Operating System Experiment 1988 Source Code* provides an overall description of the DOSE application and the unclassified source code to the application. The *Distributed Operating System Experiment (DOSE) Application User's Manual* provides a detailed description of the DOSE components (including the managers' operations and clients' capabilities). The user's manual also describes how to demonstrate the DOSE application according to the machine architecture layout (depending on the number of machines available and the type of machines used).

1.4 INSTALLATION ASSISTANCE

If problems are encountered during the installation of the DOSE application, please contact

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2.0 INSTALLING DOSE ON SUN UNIX SYSTEMS

2.1 EXTRACTING THE DOSE APPLICATION FROM THE DISTRIBUTION TAPE

The DOSE release tape for Sun UNIX is distributed on a 1/4-inch cartridge tape, and written using the UNIX **tar** command. To extract the DOSE application from the tape, the following steps should be performed:

1. Select the machine on which the DOSE application is to be installed. If this machine does not have a tape drive available, install the application using a remote tape device as discussed below.

2. Log onto the selected machine as the user who is the designated owner of the application.

   Check the local disk space before extracting contents of the tape to make sure there is enough space. The extraction takes about 800 Kbytes. After compilation, the local disk space will take about 6100 Kbytes.

3. Change to the directory where the application will reside.

4. Extract the DOSE application from the distribution tape using the UNIX command, tar. If a local tape disk device is used, execute

   % tar xvpf /dev/rst0.

   If a remote tape device is used, execute

   % rsh **remote_host** *dd if=/dev/rst0 ibs=20b obs= / tar xcpBf -*

   where **remote_host** is the name of the host machine with the tape disk device.

5. After the completion of the extraction, a listing of the current directory (UNIX command **ls**) will show four directories:

   /DBclient /graphics /parser /trackrpt

   The *DBclient* directory contains the source code to the **Database Monitor Client**. The *graphics* directory contains the source code to the **Graphics Map Client**. The *parser* directory contains the source code to the **Parser Manager** and the *trackrpt* directory contains the source code to the **Track Report Manager**.

2.2 COMPILATION OF THE SOURCE CODE

Because the distribution tape contains only the source code, the files have to be compiled in each of the four directories. The Database Monitor Client, Graphics Map Client, and Parser Manager all invoke operations on the Track Report Manager. The compilation of the prior three components needs the *trmmgr.h*, *trmcts.o*, and *trmpsl.o* files of the Track Report Manager. Thus, the files in the trackrpt directory need to be compiled first.

1. To compile the Track Report Manager, change directory to *trackrpt*. The basic framework of the Track Report Manager is constructed by using the Cronus Manager Development Tools:

   % cd trackrpt
   % cronus login **cronus_user**
   % make

The **cronus_user** is the Cronus principal who will own the automatically generated manager files. *make* will activate the **definetype** command on the file *trm.typedef* and the **genmgr** command on the file *trm.mgr*. The following files are then created: *descrip.skl*, *dispatch.c*, *header.h*, *trmcts.c*, *trmmgr.h*, *trmops.skl*, *trmparse.c*, *trmpsl.c*, *trmpsl.skl*, and *Makefile.skl*. After *make* is completed, the executable **trm** will be created and used to start the Track Report Manager. The *.o* files corresponding to each *.c* file also will be created.

The Track Report Manager can be compiled with or without graphics capability. There are three make files. The *Makefile.suncore* links to the *Suncore* graphics library in compilation, whereas *Makefile.no_suncore* does not. By default, *Makefile* is a copy of *Makefile.suncore*.

2. To compile the Parser Manger, change directory to *parser*. The basic framework of the Parser Manager, which is similar to the Track Report Manager, is constructed using the **definetype** and **genmgr** commands:

   % cd ../parser
   % make

   Again, *make* will activate the **definetype** and **genmgr** commands. The following files are created: *descrip.skl*, *dispatch.c*, *header.h*, *parsercts.c*, *parsermgr.h*, *parserops.skl*, *parserparse.c*, *parserpsl.c*, *parserpsl.skl*, and *Makefile.skl*. After *make* is completed, the executable **parser** is created to be used to start the Parser Manager. The *.o* files corresponding to each *.c* file are also created.

   Like the Track Report Manager, the Parser Manager can also be compiled with or without graphics capability defined by the different make files.

3. To compile the Graphics Map Client, change directory to *graphics*. The Graphics Map Client is a Cronus client, thus, the *make* command will compile only the C source files in the directory.

   % cd ../graphics
   % make

   After *make* is completed, the executable **graphics** is created to be used to start the Graphics Map Client. The *.o* files corresponding to each *.c* file are also created.

   Unlike the Track Report Manager and the Parser Manager, *Suncore* graphics package is required in order to compile the Graphics Map Client.

4. To compile the Database Monitor Client, change directory to *DBclient*. The Database Monitor Client is also a Cronus client. The *make* command will compile the C source files in the directory.

   % cd ../DBclient
   % make

   After *make* is completed, the executable **DBmonitor** is created to be used to start the Database Monitor Client. The *DBmonitor.o* file is also created.

   The Database Monitor Client has no graphics capability.

2.3 MULTIPLE HOST INSTALLATION

This Installation Manual thus far has described how to install the DOSE application on a single host machine. The DOSE application can be demonstrated on just one host machine but it is not an

effective way to demonstrate a distributed application. The minimum recommendation is to demonstrate the DOSE application on at least two machines.

Installation of the DOSE application on several host machines does not require copies of the source code on every machine. The executables can be simply distributed on different machines. However, if a Sun2 and a Sun3 workstation are used, a copy of the DOSE source code is required on each of the machines. Sun2 and Sun3 binaries are not compatible so these Sun workstations would need their own compilation of the source code. This is also true for Sun386i and other non-Sun workstations.

2.4 DOSE DEMONSTRATION

The *Distributed Operating System Experiment (DOSE) Application User's Manual* (February 1990) explains how to start up the Track Report Manager, the Parser Manager Graphics Map Client, and the Database Monitor Client. The manual also describes how to set up the scenario of the demonstration according to the machine architecture layout.

The release tape of the unclassified DOSE application is prepared for Sun UNIX workstations. The DOSE application can be easily ported to other hardwares such as MassComp and VAX. (A classified version of the Parser Manager runs on a MicroVAX II (VMS) at NOSC in the Distributed Systems Branch.)

3.0 REFERENCES

Gadbois, M. J. February 1990. "Distributed Operating System Experiment (DOSE) Application User's Manual." NOSC TD 1801.

Kwong (Gadbois), M. J., G. M. Sullivan, and L. C. Anderson. February 1989. "Distributed Operating System Experiment 1988 Source Code." NOSC TN 1568.*

*NOSC TNs are working documents intended for internal use only.

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13. ABSTRACT *(Maximum 200 words)*

This document explains the installation procedure for the Distributed Operating System Experiment (DOSE) Version 4.0 application. Also described is how to extract the source files from distribution tape and compile each component of the application. The companion to this document is "Distributed Operating System Experiment (DOSE) Application User's Manual," NOSC Technical Document 1801.

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